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A Data Envelopment Analysis Approach to Determine Project Activities Weight Factor

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Abstract

Planning is one the most fundamental steps of project management. Every project consists of a set of activities. With the increase in number of activities or complexity of projects, project activities efficient management is important in the defined range of resources. Due to the limited organizational resources, activities planning is an issue for managers & researchers to be concerned about. A project should be accomplished in the specified range of time & budget. Therefore planning the project with realistic attitude is a necessity. Knowing the priority & the importance of the activities leads to efficient activities management & correct and accurate allocation of time, budget, cost and other resources. Thus, different elements such as cost, time, project staffs' skill & other elements can affect each activities weight factor. Determination of activity weight factor depends on the various aspects. To this end, current study has proposed an approach to determine activities weight factor applying Data Envelopment Analysis. The proposed approach includes three phases. In the first phase project activities have been extracted based on the work breakdown structure. Then, the second phase does recognize effective parameters on activities importance. In this phase, research's literature has been reviewed & these parameters have been extracted. Afterward, based on the academic and industry's expert's idea in the field of project management effective parameters on project activities importance have been selected. In order to assign weights to the activities in the third phase, initially the proper DEA model has been chosen. Model's inputs & outputs have been determined & activities weights have been specified on the basis of gained efficiency numbers. Eventually, the proposed model has been solved & demonstrated in a numerical example.

Keywords
Project Management, Project Activities, Project Activities weight factor, Data Envelopment Analysis and Efficiency.

Biography / Biographies

Hadi Shirouyehzad currently is the Faculty member of the Department of Industrial Engineering in Najafabad Branch, Islamic Azad University, Isfahan, Iran. He graduated in Iran 1999 and 2002 and with BS and MS degrees, in industrial engineering. He achieved his PhD in industrial engineering in 2012 from the Research and science Branch, Islamic Azad University, Tehran, Iran. He is the author of three books and more than 250 has published papers at national and international levels in refereed journals and conferences since 2003.

Negin Berjis graduated in Iran in 2009 with BS in Electrical Engineering and in 2014 with MS in Industrial Engineering & Currently she is the PhD student of Operation Research & System Engineering in Najaf Abad Brach, Islamic Azad University Isfahan, Iran. Respectively, her research interests include Operation Research, Data Envelopment Analysis, Decision Making, Management, Knowledge Management, Project Management & Safety Management and performance Evaluation. Also she has published several papers in national levels in refereed conferences and journals since 2012.

Javid Jouzdani received his PhD in Industrial Engineering from the Iran University of Science and Technology. He received his MS in Socio-Economic Systems Engineering from the Amir Kabir University of Tehran (Polytechnic Tehran) and BS in Applied Mathematics from the Isfahan University. He has also been an Invited University Lecturer for the past few years. Currently, he is a faculty member at the Department of Industrial Engineering, Golpayegan University of Technology, Golpayegan, Iran. His research interests are supply networks optimisation, analysis and modelling and its applications. He has published articles in some journals such as International Journal of Production Research, Journal of Applied Mathematical Modelling, Journal of Intelligent Manufacturing, Journal of Uncertain Systems, International Journal of Operational Research and Journal of Applied Sciences and some other papers in international conferences.